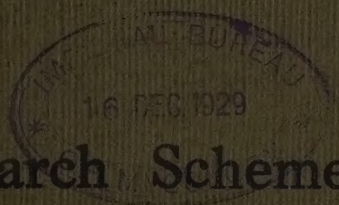
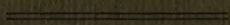


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Rubber Research Scheme (Ceylon).

Third Quarterly Circular
for
1929.



October, 1929.

RUBBER BUDDING AND SELECTION.

A PRELIMINARY NOTE ON A DISEASE OF
YOUNG RUBBER BUDDINGS.

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RUBBER BUDDING AND SELECTION.

AT a meeting of the Executive Committee of the Rubber Research Scheme, held on July 19th, 1929, a sub-committee was appointed to consider the policy and procedure to be adopted by the Rubber Research Scheme in matters connected with rubber budding and selection of high-yielding trees. This sub-committee consisted of the following gentlemen:—Dr. W. Small, M.B.E. (Chairman), The Hon'ble Mr. J. W. Oldfield, Messrs, C. E. A. Dias, L. P. Gapp, L. Lord, R. A. Taylor and J. Mitchell (Secretary). Mr. H. W. Roy Bertrand was subsequently invited to join the committee but unfortunately he was unable to attend any of its meetings. Meetings were held on July 26th, August 7th and August 22nd and the following resolutions were adopted by the members of the committee:—

1. RECORDS OF MOTHER-TREES.

(a). That a preliminary selection of high-yielding trees should be made on all interested estates and that the selection should, in the first place, be made by the superintendent from information in his possession supplemented by a measurement of the yields of latex for a period of 12 days' tapping. The Committee considered that all the trees should be tapped on the same days and if possible by the same tapper.

(b). That when the preliminary selection had been made the selected trees should be inspected by a responsible officer of the Rubber Research Scheme or of the Department of Agriculture.

(c). That the trees so selected should then be tapped as far as possible by the same tapper, the latex be coagulated after every tapping, and the coagulum be converted to dry rubber.

(d). That the tapping and collection of rubber should be carried on for a full tapping season and the records for each tree should be kept in a special book for the periodical inspection of a responsible officer.

(e). That all incomplete tappings (owing to rain, etc.) should be excluded from the records.

(f). That a record should be kept of the height and length of the cut at the beginning and end of the tapping season.

(g). That when the records for each tree were complete each should be expressed as "yield per tapping" and a final selection be made on that basis.

2. INSPECTION OF RECORDS.

(a). That records of yields which were being taken on estates should be periodically inspected by a responsible officer.

(b). That an officer of the conductor type should be trained in this work and should at regular intervals visit all estates on which mother-tree records were being taken.

3. STANDARD OF YIELD.

That only those trees which showed a yield of not less than five times the average yield of the trees of the field in which they were situated should be considered as mother-trees.

4. PROPAGANDA.

The Chairman informed the Committee that in spite of numerous attempts made by the Rubber Research Scheme to induce superintendents to take yield records and to give assistance in the matter of finding the highest yielders in Ceylon the response had been disappointing. He further stated that special attention had been drawn to this matter in the editorial of the July number of *The Tropical Agriculturist*, and that the Rubber Growers' Association had circularised members on the subject.

The committee decided:—

(a). That the matter should be brought to the notice of the Ceylon Estates Proprietary Association and Mr. Oldfield kindly undertook to impress upon the members of that Association the importance of securing records from as many estates as possible.

(b). That a leaflet or circular should be prepared showing what was being done in other rubber-growing countries and what should be done in Ceylon.

5. MOTHER-TREES AT NIVITIGALAKELE.

It was resolved that records of dry rubber to the end of the present tapping season should be obtained from all the mother-trees of which material was available at Nivitigalakele and that a selection from these should be made in March 1930.

6. DISEASE SUSCEPTIBILITY.

A discussion took place on the question of continuing the testing of mother-trees which had subsequently developed brown bast and of trees which periodically suffered from attacks of bark rot. The majority favoured the view that brown bast incidence could be greatly minimised by increasing the interval between

tappings and by taking thicker parings and that bark rot was preventable. It was considered that the present knowledge of the inheritability of such diseases as those specified was insufficient to justify the cessation of tests of mother-trees which had developed these diseases. Again, it was considered that the problem was one which should be studied by the research stations.

7. POLICY IN TESTING CLONES DERIVED FROM LOCAL MOTHER-TREES.

(A). On Estates.

(a). That arrangements should be made for the supervision by responsible officers of the Rubber Research Scheme or the Department of Agriculture of tests being made on estates should the estates express a desire for such supervision.

(b). That where such supervision is exercised the results of tapping on the estates should be published periodically by the Rubber Research Scheme or the Department of Agriculture for general information.

(B). On Experiment Stations.

(a). That the results of tests of mother-trees on experiment stations should be published periodically and that officers should be empowered to issue approval certificates where the results are favourable.

(b). That when such trees have been under properly supervised tests for a period of one year the Rubber Research Scheme or the Department of Agriculture should, where results are favourable, specify approval of such mother-trees for the benefit of the estates owning the mother-trees and the guidance of the general public.

8. POLICY IN PROCURING BUD-WOOD FOR EXPERIMENT STATIONS.

(a). That where bud-wood from estates is not supplied free of charge bud-wood from desirable mother-trees should be purchased.

(b). That all requests for bud-wood from estates should be accompanied by an undertaking not to dispose of any of the products of such bud-wood until after two years' test tapping of the budded plants had been completed.

(c). That all estates which supply free bud-wood should be kept informed of the results of the tapping tests of buddings from their mother-trees to enable them to lay down multiplication bud-wood nurseries should the tests give favourable indications.

(d). That estates supplying free bud-wood should be informed that the experiment stations might desire to use such bud-wood or subsequent products of such bud-wood for the establishment of seed gardens.

9. POLICY IN DISPOSAL OF PRODUCTS OF PROVED TREES ON EXPERIMENT STATIONS.

(a). That where bud-wood is purchased the experiment stations should be at liberty to dispose of the products in any way that may be considered desirable.

(b). That products of bud-wood supplied free should be disposed of in accordance with the conditions stated in sections 8b and 8c.

10. SEED GARDENS.

That seed gardens with single clones, with two clones, and with four clones should be established for seed selection purposes, and that seed and leaf characters of all selected mother-trees should be recorded by responsible officers for identification purposes.

11. LAND FOR EXPERIMENTAL WORK & SEED GARDENS.

(a). The Chairman reported that the land situated at Paspolakande was not available as an experiment station and that it would be necessary to secure land elsewhere. Mr. Dias stated that advertisements had appeared in the official *Gazette* offering land for sale in the Moragala District and Mr. Oldfield stated that land was available in the neighbourhood of the land offered to the Anglo-Ceylon and General Estates Co., Ltd. in exchange for St. Coomb's Estate. The committee resolved that the Government should be approached on the matter and that particulars of the *Gazette* advertisements should be obtained. It was further resolved that, if possible, the land should be secured on lease at a nominal rental.

(b). The Chairman informed the committee that advertisements asking for blocks of land to be used as seed gardens had not proved successful and it was necessary to reconsider the question. It was suggested that blocks of land might be made available on the Government Experiment Stations at Wariapola, Anuradhapura, Kanniyai, Ambalantota, Allai and Bataata and the committee resolved that an enquiry into these possibilities should be made. Mr. Lord reported that on account of the dry conditions in certain of these stations it would be necessary to determine if rubber would grow satisfactorily. It was also resolved that the Conservator of Forests be approached with a view to securing blocks of land in re-afforestation areas. It was further resolved that an appeal should be made to estate agencies for assistance in this matter.

12. POLICY RE SUPPLYING BUD-WOOD AND SEED TO SMALL-HOLDERS.

The committee approved of the suggestion that 25 per cent. of the bud-wood and of seed produced on the experimental stations and seed gardens should be reserved for small-holders should such a demand arise.

13. PUBLICATIONS.

The committee resolved that Messrs. Taylor and Lord be instructed to prepare as soon as possible a leaflet on the lines of the Department of Agriculture leaflet No. 43, embodying the decisions arrived at by the sub-committee and laying down the methods to be adopted by estates in the selection of high-yielding trees. It was further suggested that recommendations should be made for the management of bud-wood multiplication nurseries and that the leaflet should indicate that advice could be obtained from the Department of Agriculture or the Rubber Research Scheme.

On behalf of the committee,

J. MITCHELL,
Organising Secretary,
Rubber Research Scheme.

Peradeniya,
September 11th, 1929.

A PRELIMINARY NOTE ON A DISEASE OF YOUNG RUBBER BUDDINGS.

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A disease of young shoots of bud-grafted *Hevea* which may prove to be important has recently been studied. Specimens of diseased green shoots were received almost simultaneously from two different estates in the Kalutara district. In both cases the shoot had evidently been attacked about three inches from the tip, and when the specimens were received the disease was manifested as a sunken discoloured area about six inches long on one side of the shoot. Both shoots bore the fructifications of *Gloeosporium alborubrum*.

Cultures made from the margins of the diseased tissue yielded two fungi, *Phytophthora* sp. and *Gloeosporium alborubrum*. Inoculations with a pure culture of the *Phytophthora* on young green shoots of nursery seedlings established this fungus as the cause of the disease. Both wounded and unwounded shoots were inoculated and in all cases infection took place while the control plants remained healthy. *Phytophthora* sp. was re-isolated in pure culture from one of the unwounded inoculated shoots, and further inoculations on unwounded shoots confirmed the causation of the disease.

On the inoculated shoots the disease first appeared as blackish, watery-looking, vertical streaks. After six days these had merged into black sunken areas 1 to 2 inches in length, on the surface of which sporangiophores and sporangia of *Phytophthora* could be seen with a microscope. Subsequently the disease spread up and down the shoots and secondary fungi gained entrance. A month after the inoculations had been made the shoots had died back for a distance of about 1 foot from the tip. Owing probably to the abnormally dry weather conditions obtaining at this time the die-back was checked at this stage, and new shoots developed below the affected parts.

It is not known whether this disease will prove to be a serious factor in retarding the development of young buddings. The fungus spreads by means of sporangia; these produce zoospores whose motility and germination are dependent on the presence of water. The disease, like others caused by species of *Phytophthora*, is therefore a wet-weather disease, and its importance will probably depend to a large extent on weather

conditions. The inoculation experiments referred to above indicate that a spell of dry weather tends to check the progress of the disease. The *Phytophthora* itself may be confined to the succulent portions of the shoot, but there is the danger of introducing *Diplodia* and other fungi which may kill back the entire plant.

The fungus causing the disease has not been identified with any of the previously described tropical species of *Phytophthora*. It apparently differs morphologically from *P. palmivora* which, under the former name of *P. faberi*, is well known as the cause of secondary leaf-fall and other diseases of Hevea. The size and shape of the sporangia, which are taxonomic features, are however appreciably variable according to external conditions such as nature and age of culture, humidity, etc., so that the fungus will have to be grown under strictly standard conditions before it can be compared with other species.

The disease has only been reported as occurring in nature on buddings, but the inoculations show that seedlings are also susceptible to attack. The only reference that has been found to a similar disease in other countries is a note by Weir. He describes a disease which attacks the young bud-shoot at its extremity and mentions a *Phytophthora* as a possible causal agent. In the specimens examined in Ceylon the disease originated, not at the extremity of the shoot, but some inches below it. The Rubber Research Scheme would be glad to receive specimens of diseased shoots conforming to the symptoms described above.

Diseased shoots should be cut off well below the affected part and burnt. Spraying with Bordeaux Mixture has on one estate given effective control.

REFERENCE.

- Weir, J. R. A blight of young buddings. *Quarterly Journal, Rubber Research Institute of Malaya*, Vol 1, Nos. 1 and 2, 1929.

NOTICES.

SUBSCRIPTIONS.

Arrangements have now been made for Bulletins and Circulars of the Ceylon Rubber Research Scheme to be made available to non-contributors to the Scheme at the rate of Rs. 15-00 per annum, post free.

GLASS HYDROMETERS.

21 Glass hydrometers for testing latex and for testing formic acid as specified and as recommended by the Rubber Research Scheme (Ceylon) may be obtained at a cost of Rs. 12.50 and Rs. 10.50 each respectively, from :—

Messrs. WALKER, SONS & Co., Ltd.,
Engineering & Estate Supplies Department,
Colombo.

